

Executive Summary

This report summarizes the Quantitative Risk Assessment (QRA) study conducted on the Florida East Coast Railway (FECR) movement of liquefied natural gas (LNG) (b) (4) ISO tank containers by rail in freight trains. In order to assist the process safety management of the overall design, testing, and implementation project, the focus of the study was to evaluate the risk for movement of the (b) (4) ISO tank containers by intermodal rail transportation. This Executive Summary highlights Exponent's findings in the QRA. Note that this Executive Summary does not contain all of Exponent's technical evaluations, analyses, conclusions, and recommendations. Hence, the main body of this report is at all times the controlling document.

E.1 QRA Overview

Movements were evaluated along three proposed routes: (1) from Hialeah Yard to Port of Miami, (2) from Hialeah Yard to Port Everglades, and (3) from Hialeah Yard to Bowden Yard in Jacksonville. ISO Lift On/Lift Off activities and train movements were evaluated in four yards/intermodal facilities: (1) Hialeah Yard, (2) Bowden Yard, (3) Port Everglades, and (4) Port of Miami.

The QRA relied upon a series of concept-phase Hazard Identification (HAZID) studies performed in FECR's LNG fuel tender project¹ along with a review of intermodal Lift On/Lift Off hazards to identify potential accident scenarios. A list of potential accident scenarios was developed from the HAZID studies, literature review, and review of FECR intermodal facilities and was used to define a reduced list of representative accidental release scenarios for the QRA.

The (b) (4) ISO tank container movements were grouped into three distinct activities, distinguished by the type of operations and the risks present:

1. Lift On and yard movement at the Hialeah Rail Yard.
2. Mainline train movement.
3. Lift Off and yard movement at the receiving yard/intermodal facility.

The hazard scenarios corresponded to accidents involving the ISO tank, which is a (b) (4) [REDACTED]. Accident event

¹ Exponent Project No. 1308194.000 report titled: "HAZID Study Report, Florida East Coast Railway Dual-Fuel Locomotive LNG Tender Project," issued January 2, 2015. Exponent Project No. 1308194.000 report titled: "HAZID Study Report, Florida East Coast Railway Dual-Fuel Locomotive LNG Tender Project, Updated to Reflect Chart LNG Tender," issued October 24, 2014. Exponent Project No. 1308194.000 report titled: "Integration HAZID Study Report, Florida East Coast Railway Dual-Fuel Locomotive and LNG Tender Project," issued December 12, 2014.